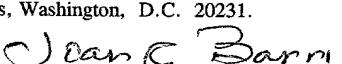


FCCMPTO-1390 (REV 12-29-99)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				WFA-1100
INTERNATIONAL APPLICATION NO. PCT/US99/27251		INTERNATIONAL FILING DATE 17 November 1999 (17.11.99)		PRIORITY DATE CLAIMED 25 November 1998 (25.11.98)
TITLE OF INVENTION LIQUEFIED WATER SOLUBLE ACIDITY-REDUCING FORMULATION FOR FOOD AND BEVERAGE PRODUCTS				
APPLICANT(S) FOR DO/EO/US AFTOORA, William F.				
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:				
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).</li> <li>4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))           <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))           <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input checked="" type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li> <li>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>				
Items 11. to 16. below concern document(s) or information included:				
<ol style="list-style-type: none"> <li>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</li> <li>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</li> <li>13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.            <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</li> <li>14. <input type="checkbox"/> A substitute specification.</li> <li>15. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>16. <input checked="" type="checkbox"/> Other items or information:</li> </ol>				
PTO Form PTO/SB/08A Copies of References Cited (16 references) Statement Claiming Small Entity Status Check in the Amount of \$354.00 Return Receipt Postcard				
<u>Certificate of Express Mailing</u>				
I hereby certify that this correspondence is being deposited on the date shown below with the United States Postal Service as Express Mail - Label No. EL615297391US - "Express Mail Post Office to Addressee" in an envelope with sufficient postage addressed to: Box Patent Application, Commissioner for Patents, Washington, D.C. 20231.				
 (type or print name of person signing paper)		 (signature of person mailing paper)		
		10/27/00 (date)		

17.  The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5) ):**

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$970.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$840.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$690.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$670.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$96.00

**CALCULATIONS PTO USE ONLY****ENTER APPROPRIATE BASIC FEE AMOUNT =**

\$ 690.00

Surcharge of \$130.00 for furnishing the oath or declaration later than  20  30 months from the earliest claimed priority date (37 CFR 1.492(e)).

\$ 0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	21 - 20 =	1	X \$18.00	\$ 18.00
Independent claims	3 - 3 =	0	X \$78.00	\$ 0.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00	\$ 0.00
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$ 708.00
Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				\$ 354.00
<b>SUBTOTAL =</b>				\$ 354.00
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 0.00
<b>TOTAL NATIONAL FEE =</b>				\$ 354.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$ 0.00
<b>TOTAL FEES ENCLOSED =</b>				\$ 354.00
				Amount to be refunded:
				\$
				charged:
				\$

a.  A check in the amount of \$ 354.00 to cover the above fees is enclosed.

b.  Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.

c.  The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 18-0987. A duplicate copy of this sheet is enclosed.

**NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.**

SEND ALL CORRESPONDENCE TO:

Joseph G. Curatolo  
Renner, Kenner, Greive, Bobak, Taylor & Weber  
24500 Center Ridge Road, Suite 280  
Westlake, OH 44145  
US



SIGNATURE:

Joseph G. Curatolo

NAME

28,837

REGISTRATION NUMBER

09/674369

534 Rec'd PCT/PTO 27 OCT 2000

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: William F. AFTOORA Docket No.: WFA-1100  
Serial No: New United States National Stage Examiner: not assigned yet  
Patent Application  
Filed: October 27, 2000 Group Art Unit: not assigned yet  
For: LIQUEFIED WATER SOLUBLE ACIDITY-REDUCING FORMULATION FOR  
FOOD AND BEVERAGE PRODUCTS

BOX PATENT APPLICATION  
COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Before the first Office Action on the merits, please amend the present application as follows:

IN THE SPECIFICATION

Page 1, line 5: Please delete the paragraph under the heading "CROSS REFERENCE TO RELATED APPLICATIONS", and insert the following paragraph

--This application is a national stage application of International Application No. PCT/US99/27251, filed November 17, 1999, which claims the benefit of United States Provisional Application No. 60/109,785, filed November 25, 1998.--

Certificate of Express Mailing

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Joan E. Barris  
(type or print name of person signing paper)

Joan E. Barris  
(signature of person mailing paper)

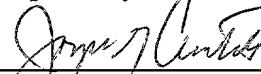
10/27/00  
(date)

REMARKS

The present patent application is a national stage patent application of International Application No. PCT/US99/27251, filed November 17, 1999. International Application No. PCT/US99/27251 claims the benefit of the filing date of United States Provisional Application No. 60/109,785, filed November 25, 1998. Applicant respectfully requests entry of the above amendment and earnestly solicits a formal Notice of Allowability directed to claims 1-21.

Should the Examiner have any questions, the undersigned attorney would welcome a telephone call.

Respectfully submitted,

  
\_\_\_\_\_  
Joseph G. Curatolo, Esq. (Reg. No. 28,837)  
Renner, Kenner, Greive, Bobak, Taylor & Weber  
24500 Center Ridge Road, Suite 280  
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Attorney for Applicant

10-27-2000  
Date

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

**STATEMENT CLAIMING SMALL ENTITY STATUS  
(37 CFR 1.9(f) & 1.27(b)) - INDEPENDENT INVENTOR**

Docket Number (Optional)

WFA-1100

Applicant, Patentee, or Identifier: William F. AFTOORAApplication or Patent No.: New United States National Stage Patent ApplicationFiled or Issued: October 27, 2000
**Title: LIQUEFIED WATER SOLUBLE ACIDITY-REDUCING FORMULATION  
FOR FOOD AND BEVERAGE PRODUCTS**

As a below named inventor, I hereby state that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

the specification filed herewith with title as listed above.  
 the application identified above.  
 the patent identified above.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

No such person, concern, or organization exists.  
 Each such person, concern, or organization is listed below.

Separate statements are required from each named person, concern, or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

\*\*\*\*\*  
NAME OF INVENTOR

William F. AFTOORA  
\*\*\*\*\*  
NAME OF INVENTOR

\*\*\*\*\*  
NAME OF INVENTOR

Signature of inventor

Signature of inventor

Signature of inventor

Date

Date

Date

**LIQUEFIED WATER SOLUBLE ACIDITY-REDUCING  
FORMULATION FOR FOOD AND BEVERAGE PRODUCTS****CROSS REFERENCE TO RELATED APPLICATIONS**

5

The present application claims priority from United States Provisional Patent Application No. 60/109,785, filed on November 25, 1998.

**TECHNICAL FIELD OF THE INVENTION**

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The present invention is directed to a water soluble acidity reducing formulation. The present invention is more particularly directed to a liquefied water soluble acidity reducing additive for food and beverage products containing an edible bicarbonate, a soluble binder, water and optionally a preservative.

15

**BACKGROUND OF THE INVENTION**

Many individuals are sensitive to high acid-containing food and beverage products, such as fresh citrus fruits, citrus fruit juices, foods containing citrus fruit juices and tomato sauce. In order to consume such foods and beverages without experiencing gastrointestinal pain or discomfort due to the high acid content of ingested foods, individuals having a sensitivity to high acid-containing foods must often ingest a commercially available antacid shortly before or after consumption of the food or beverage product.

25

Individuals with open mouth wounds and sores are also discouraged from consuming high acid containing food and beverage products to avoid experiencing local pain and irritation to the open mouth wounds and sores.

30

It is known in the art to provide food and beverage compositions, such as fitness drink powders, sweetener compositions and carbonating agents for coffee, containing both acidulant components and an edible bicarbonate. The addition of an edible bicarbonate to such a composition is usually necessary to raise the pH of the composition due to the addition of the acidulant components.

Eisenstadt, U.S. Patent No. 3,946,121 discloses a non-caloric saccharine-based sweetener composition without a bitter after-taste comprising: (a) saccharine; (b) glucono delta lactone; and (c) an edible bicarbonate. The addition of an edible bicarbonate to the sweetener composition is necessary to raise the pH of the composition due to the addition of the glucono delta lactone.

Metz, U.S. Patent No. 4,328,115, discloses an improved chemical acidogen system for foodstuffs, such as bovine milk and soybean milk to produce coagulated protein food products including cottage cheese, baker's cheese, cream cheese and "tofu" (soybean curd). The chemical acidogen system comprises hydrogen peroxide and an aliphatic dione having 2 to 6 carbon atoms, such as glyoxyl, pyruvaldehyde, diacetyl, 2,3-pentadione and 1,2-cyclohexanedione. Throughout the acidification process, the pH of the milk solutions are progressively lowered at a controlled rate to the protein coagulation stage (usually at a pH below 5.0) by the acid produced by the oxidation of the dione component of the acidogen system. The reference further discloses an embodiment of the chemical acidogen system comprising hydrogen peroxide, pyruvaldehyde and carbon dioxide-releasing sodium bicarbonate that may be added as a substitute for yeast in the leavening process for bakery products.

Vialatte nee Geolier, U.S. Patent No. 4,461,778, discloses a composition for the deacidification of malic acid containing food liquids comprising: (a) calcium carbonate; (b) potassium bicarbonate; (c) calcium tartrate; and (d) calcium double salt of tartaric and malic acids to cause precipitation of tartromalate from the liquid. The reference discloses that the potassium bicarbonate is included to promote the elevation of the pH of the solution.

Prinkkilä et al. U.S. Patent No. 4,853,237 discloses a fitness drink powder comprising: (a) a long chain glucose polymer; (b) sodium chloride; (c) sodium bicarbonate; (d) magnesium chloride; and (e) fruit acid, wherein said drink powder has a pH of 5.5 to 5.8.

Canton, U.S. Patent No. 5,350,591, discloses a dry mix additive for a hot coffee beverage which induces a foam on top of the coffee. The dry mix additive comprises: (a) a sugar, such as monosaccharides including glucose and fructose and disaccharides including sucrose, maltose, lactose and mixtures thereof; (b) sodium bicarbonate; (c) a two-component releasing agent, wherein the first component is selected from the group consisting of monocalcium phosphate, fumaric acid and citric acid and wherein the second component is selected from the group consisting of sodium aluminum phosphate, sodium aluminum sulphate and dicalcium phosphate dihydrate; and (d) a hydrating agent, such as food-grade starch, gelatinized starch and unmodified cornstarch. The releasing agent reacts with sodium bicarbonate in a hot beverage to release carbon dioxide gas, thus resulting in a foaming effect.

It is, therefore, desirable to develop a liquefied water soluble, edible acid-reducing formulation capable of raising the pH of high acid-containing food and beverage products, such that individuals sensitive to high acid-containing foods and beverages can consume them without having to also ingest a commercially available antacid composition.

## SUMMARY OF THE INVENTION

20 It is therefore an object of the present invention to provide a liquefied water soluble acidity reducing formulation containing an edible bicarbonate, a binder, water and optionally a preservative.

25 It is a further object of the present invention to provide a liquefied water soluble acidity reducing formulation that does not contain any acidulant components.

It is a further object of the present invention to provide a method to raise the pH of a consumable food or beverage product before consumption of said food or beverage.

These and other of the foregoing objects, together with the advantages thereof over the art known relating to acid reducing food formulations, which shall become apparent from the disclosure which follows, are accomplished by the invention as hereinafter described and claimed.

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In general, the present invention provides a liquefied water soluble acidity reducing formulation comprising an edible bicarbonate, a soluble binder, water and optionally a preservative, wherein the liquefied acidity reducing formulation does not contain any acidulant components.

10

The present invention further provides a liquefied water soluble acidity reducing formulation for food and beverage products consisting essentially of an edible bicarbonate, a soluble binder, water and optionally a preservative.

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The present invention further provides a method for raising the pH of a consumable food product before consumption of said food product comprising: mixing with said beverage, an effective amount of a liquefied, water soluble acidity-reducing formulation comprising: (i) an edible bicarbonate; (ii) a soluble binder; (iii) water; and (iv) optionally, a preservative, wherein the formulation substantially excludes acidulent components.

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The present invention further provides a method for raising the pH of a consumable food or beverage product before consumption of said food or beverage product comprising: mixing with said food or beverage, an effective amount of a liquefied water soluble acidity reducing formulation consisting essentially of an edible bicarbonate, a soluble binder, water and optionally a preservative.

## **DETAILED DESCRIPTION OF THE INVENTION**

30

The present invention is directed to a liquefied water soluble acidity reducing formulation comprising an edible bicarbonate, a soluble binder, water and optionally a preservative. Preferably, the formulation substantially excludes acidulent

components. Most preferably, the liquefied, acidity-reducing formulation of the present invention consists essentially of sodium bicarbonate, a cornstarch binder and water. The main advantage of the present invention is that individuals sensitive to high levels of acidity may add the liquefied acidity reducing formulation of the present invention to a food or beverage product prior to consumption to avoid having to ingest an antacid before or after consumption of high acid-containing foods and beverages. Addition of the liquefied acidity-reducing formulation of the present invention to a highly acidic food or beverage product allows individuals with open mouth sores to comfortably consume the acidic food or beverage without irritation to the mouth wounds and sores.

The term "edible bicarbonate" used throughout the specification refers to the bicarbonate salts, such as sodium bicarbonate, potassium bicarbonate and calcium bicarbonate. The preferred edible bicarbonate is sodium bicarbonate.

Suitable water soluble binders for use with the liquefied acidity reducing formulation of the present invention include cornstarch, wheat flower, arrowroot, xanthan gum, gum arabic, guar gum, agar agar, locust bean gum, gum tragacanth, cellulose gums and mixtures thereof. Cornstarch is the preferred water soluble binder.

In another embodiment, about 0.5 to about 1 part of propylene glycol can be added to the formulation to moisten the binder and to prevent aggregation or clumping of the binder in the formulation. Preferably, the propylene glycol may be combined with the binder to form a slurry, which is then added to a mixture of water and soluble bicarbonate.

A preservative may be included in the liquefied acidity-reducing formulation of the present invention to increase the stability and shelf life of the formulation. Suitable preservatives are selected from the group consisting of sodium benzoate and potassium sorbate.

The liquefied acidity reducing formulation of the present invention comprises about 15% to about 20% edible bicarbonate by weight, based upon the weight of the edible bicarbonate, soluble binder and water. A preservative, if present, is generally in the amount of less than 1% based on the total weight of the liquefied acidity-reducing formulation.

A method is further included for raising the pH of an acid-containing consumable food or beverage product before consumption of said food or beverage product comprising mixing with said food or beverage product, an effective amount of a liquefied soluble acidity reducing formulation comprising an edible bicarbonate, preferably sodium bicarbonate, a soluble binder, preferably a cornstarch binder, water and optionally a preservative. Preferably, the formulation substantially excludes acidulant components. Most preferably, the liquefied, acidity-reducing formulation of the present invention consists essentially of sodium bicarbonate, a cornstarch binder and water.

In a preferred embodiment, the acidity reducing formulation of the present invention is provided as a liquid. In another embodiment, the acidity reducing formulation of the present invention may be reconstituted from a dry powder with water.

Prior to consumption, several drops of the liquefied acidity-reducing formulation of the present invention are mixed with a high acid-containing food or beverage product until the pH of said food or beverage product is neutralized. The amount of the acidity reducing formulation of the present invention that is to be added is dependent on the acidity of the food or beverage product. The amount added should be effective to raise the pH of the food or beverage product from about 0.5 to about 2 pH units, preferably from about 0.8 to about 1.2 pH units. The resulting food or beverage product can be consumed without pain or discomfort by individuals having a hypersensitivity to acid or who have open mouth wounds or sores.

In another embodiment, the acidity reducing formulation of the present invention may be added to a food product upon packaging or bottling. The packaged acid-containing food product should include an effective amount of the acidity reducing formulation of the present invention to raise the pH of the food product from about 0.5 to about 2 pH units, preferably from about 0.8 to about 1.2 pH units.

The liquefied acidity-reducing formulation of the present invention may be prepared by the steps of combining 4 parts by weight of an edible bicarbonate, such as at least one of sodium bicarbonate, calcium bicarbonate and potassium bicarbonate, 1 part by weight of a soluble binder, such as at least one of cornstarch, wheat flower and arrowroot, 16 parts by weight of cold water and optionally less than about 1% by weight of a preservative, based on the total weight of the formulation. The above formulation is brought to a boil over a medium to low heat. Once the formulation has been brought to a boil, the formulation is simmered over a low heat for two minutes. It is essential that the formulation is simmered at a low temperature to avoid foaming. Upon completion of the boiling process, the entire formulation may be chilled at 140°F for pasteurization purposes. The resulting thickened liquefied acidity-reducing formulation can be packaged and stored in a bottle having a dropper means. In a preferred embodiment, the liquefied acidity-reducing formulation can be packaged and stored in a plastic squeeze bottle having a nipple dropper means. The resulting formulation can be conveniently added, dropwise, to a high acid-containing food or beverage product.

In an alternative method, the liquefied acidity-reducing formulation of the present invention may be prepared by adding the soluble binder and the edible bicarbonate to water having a temperature of about 100°F to about 115°F. The components are blended with an immersible blender without any boiling of the formulation.

## EXPERIMENTAL

The following examples are set forth to illustrate the methods of preparing the liquefied, water soluble acidity-reducing formulation of the present invention, 5 and the effect of the formulation on the pH of food and beverage products in further detail. The following examples, however, should not be construed as limiting the present invention in any manner.

### Example 1

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A liquefied acidity-reducing formulation was prepared by dissolving 1 part of cornstarch binder in 16 parts of cold water. The dissolved cornstarch mixture was brought to a boil by heating over a low heat. The boiled cornstarch mixture was removed from the heat, and 4 parts of sodium bicarbonate was added to the 15 cornstarch mixture. The mixture of cornstarch and sodium bicarbonate was blended with a high speed immersible blender to produce a homogenous mixture of sodium bicarbonate and cornstarch. Once blended, the mixture was allowed to cool to about 100°F. After cooling, 0.333 parts of xanthan gum binder was added to the mixture and blended with a high speed immersible blender. The formulation 20 exhibited excellent pourability into a dropper bottle, and was easily dispensed dropwise, into a food or beverage product.

### Example 2

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A liquefied acidity reducing formulation was prepared in cool water without any boiling. The formulation was prepared by dissolving 4 parts of sodium bicarbonate in 16 parts of water having a temperature of about 105°F. The dissolved sodium bicarbonate mixture was blended with 0.5 parts of xanthan gum binder with a high speed immersible blender. The formulation exhibited excellent 30 pourability into a dropper bottle, and was easily dispensed dropwise, into a food or beverage product.

Example 3

Another liquefied acidity reducing formulation was prepared in cool water without any boiling. The formulation was prepared by dissolving 4 parts of sodium bicarbonate in 16 parts of water having a temperature of about 105°F. The dissolved sodium bicarbonate mixture was blended with 1 part of gum arabic. 0.5 parts of xanthan gum binder was added to the mixture of sodium bicarbonate, gum arabic, and water, and was blended thoroughly with a high speed immersible blender. Again, the formulation exhibited excellent pourability into a dropper bottle, and was easily dispensed dropwise, into a food or beverage product.

The effect of a liquefied, water soluble acidity-reducing formulation of the present invention comprising sodium bicarbonate, cornstarch binder and water, on the change in pH levels was tested on several commonly consumed high acidity-containing food products. The test method and results are described hereinbelow.

The initial pH of each of Sample Nos. 1-7 was determined with a pH measuring instrument manufactured by Hanna Instruments. Prior to measuring the pH of the samples, the pH measuring instrument was calibrated with buffer solutions of pH 4.0 and 10.0. The initial pH, prior to the addition of the liquefied acidity-reducing formulation of the present invention, of each sample was measured and recorded. Three drops of the liquefied acidity-reducing formulation of the present invention was added to four ounces of each of Sample Nos. 1-7. The change in the pH levels of the samples containing the liquefied acidity-reducing formulation of the present invention was measured with the pH measuring instrument as described hereinabove. The data showing the increase in the pH of Sample Nos. 1-7 is contained in Table I below.

**TABLE I**

Sample No.	Initial pH of Food Product	pH of Food Product after treatment.
1	3.0	4.1
2	2.8	3.7
3	2.3	3.2
4	2.6	3.5
5	1.7	2.5
6	5.2	6.4
7	4.1	5.0

As shown in Table I above, Sample No. 1 comprising freshly squeezed 5 orange juice, exhibited an increase of 1.1 pH units following the addition of the liquefied, water soluble acidity-reducing formulation of the present invention. Sample No. 2 comprising orange juice from concentrate, Sample No. 3 comprising freshly squeezed grapefruit juice, Sample No. 4 comprising grapefruit juice from concentrate, and Sample No. 7 comprising tomato sauce, each exhibited an increase 10 of 0.9 pH units following the addition of the liquefied, water soluble acidity-reducing formulation of the present invention. Sample No. 5 comprising freshly squeezed lemon juice and Sample No. 6 comprising fresh brewed black coffee, each exhibited an increase of 0.8 pH units following the addition of the liquefied, water soluble acidity-reducing formulation of the present invention.

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As shown and described in Table I above, the liquefied, acidity-reducing formulation of the present invention effectively increases the pH of commonly consumed high acidity containing food products.

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The liquefied acidity reducing formulation of the present invention can effectively raise the pH of high acid containing food products including fruit juices

such as, orange juice, grapefruit juice, lemon juice, vegetable juices, coffee, tomato sauces, chili, soups and alcoholic beverages, such as margaritas and wines.

The addition of about 2 to about 3 drops of the liquefied water soluble 5 acidity-reducing formulation of the present invention to six ounces of a high acidity-containing food product effectively raises the pH of said food product, without altering the taste of the food product to which it is added. It is preferred that initially 2 to 3 drops of the acidity-reducing formulation of the present invention are added, dropwise, to six ounces of a food product. Depending on the initial pH of 10 the food product to be consumed and an individual's own preference, up to 10 drops can be added, dropwise, to six ounces of a high acidity-containing food product. It should be noted that the addition of more than 10 drops of the acidity-reducing formulation of the present invention to six ounces of a high acidity-containing food product may result in excessive effervescence, due to the evolution of gas produced 15 by the edible bicarbonate, and the alteration of the original taste of the food product.

Based on the foregoing disclosure, it should now be apparent that the use of the liquefied, water soluble acidity-reducing formulation of the present invention will carry out the objects set forth hereinabove. The examples disclosed 20 hereinabove are for illustrative purposes only, and the present invention is not limited to them. Thus, the scope of the invention shall include all modifications and variations that may fall within the scope of the attached claims and equivalent embodiments.

**I CLAIM:**

1. A liquefied soluble acidity reducing formulation comprising an edible bicarbonate, a soluble binder, water and optionally a preservative, wherein  
5 the formulation substantially excludes acidulant components.
2. The liquefied soluble acidity reducing formulation, according to claim 1, wherein the edible bicarbonate is selected from the group consisting of sodium bicarbonate, calcium bicarbonate and potassium bicarbonate.  
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3. The liquefied soluble acidity reducing formulation, according to claim 1, wherein the soluble binder is selected from the group consisting of cornstarch, wheat flower, arrowroot, xanthan gum, gum arabic, guar gum, agar agar, locust bean gum, gum tragacanth, cellulose gums and mixtures  
15 thereof.
4. The liquefied soluble acidity reducing formulation, according to claim 1, wherein the preservative is present and is selected from the group consisting of sodium benzoate and potassium sorbate.  
20
5. The liquefied soluble acidity reducing formulation, according to claim 1, wherein said formulation includes from about 15% to about 20% by weight of said edible bicarbonate, based on the weight of the edible bicarbonate, soluble binder and water.  
25
6. The liquefied soluble acidity reducing formulation, according to claim 1, wherein said formulation includes less than about 1% by weight of said preservative, based on the weight of the bicarbonate and the soluble binder.  
30
7. The liquefied soluble acidity reducing formulation, according to claim 1, consisting essentially of an edible bicarbonate, a soluble binder, water and optionally a preservative.

8. The liquefied soluble acidity reducing formulation, according to claim 7, wherein the edible bicarbonate is selected from the group consisting of sodium bicarbonate, calcium bicarbonate, potassium bicarbonate.

5 9. The liquefied soluble acidity reducing formulation, according to claim 7, wherein the soluble binder is selected from the group consisting of cornstarch, wheat flower, arrowroot, xanthan gum, gum arabic, guar gum, agar agar, locust bean gum, gum tragacanth, cellulose gums and mixtures thereof.

10 10. The liquefied soluble acidity reducing formulation, according to claim 7, wherein the preservative is selected from the group consisting of sodium benzoate and potassium sorbate.

15 11. The liquefied soluble acidity reducing formulation, according to claim 7, wherein said formulation includes from about 15% to about 20% by weight of said edible bicarbonate, based on the weight of the edible bicarbonate, soluble binder and water.

20 12. The liquefied soluble acidity reducing formulation, according to claim 7, wherein said formulation includes from less than about 1% by weight of said preservative, based on the weight of the bicarbonate and the soluble binder.

25 13. The liquefied soluble acidity reducing formulation, according to claim 1, wherein the formulation includes from about 0.5 to about 1 part of propylene glycol.



20. A packaged acid-containing food product containing a pH increasing amount of a formulation consisting essentially of an edible bicarbonate, a soluble binder, water and optionally a preservative.

5 21. A packaged acid-containing food product, according to claim 14, wherein said formulation excludes acidulant components.

## ABSTRACT

A liquefied acidity reducing formulation for food and beverage products consisting essentially of an edible bicarbonate, a water soluble binder, water and 5 optionally a preservative. A method is also provided to raise the pH of a consumable food or beverage product comprising mixing an effective amount of the liquefied acidity reducing formulation with a food product prior to consumption.